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1 Counterfeiting attack on a lossless authentication watermarking scheme ■
Yongdong Wu, Changsheng Xu, Feng Bao
May 2003 **Selected papers from the 2002 Pan-Sydney workshop on Visualisation - Volume 22 VIP '02**
Publisher: Australian Computer Society, Inc.
Full text available: ▦ pdf(45.19 KB)   Additional Information: full citation, abstract, references, index terms

> This paper describes an effective attack on a lossless authentication watermarking scheme [Fridrich et. al 2001]. Given sufficient number of pairs of stego-images and its cover-images, an attacker can obtain the data (e.g., random walk sequence, lookup table) generated from a secret key. With these data, the attacker can easily forge authentic images. The experiment demonstrates this attack is very efficient to the lossless watermarking scheme. To avoid such attack, we modify the process of look ...

> **Keywords**: cover-image attack, lossless authentication watermarking (LAW)

2 Multiple embedding using robust watermarks for wireless medical images ■
◈ Dominic Osborne, Derek Abbott, Matthew Sorell, Derek Rogers
October 2004 **Proceedings of the 3rd international conference on Mobile and ubiquitous multimedia MUM '04**
Publisher: ACM Press
Full text available: ▦ pdf(640.16 KB)   Additional Information: full citation, abstract, references

> Within the expanding paradigm of medical imaging and wireless communications there is increasing demand for transmitting diagnostic medical imagery over error-prone wireless communication channels such as those encountered in cellular phone technology. Medical images must be compressed with minimal file size to minimize transmission time and robustly coded to withstand these wireless environments. It has been reinforced through extensive research that the most crucial regions of medical images m ...

> **Keywords**: authentication, medical images, semi-fragile watermarking

3 Watermarking: Watermarking of MPEG-2 video in compressed domain using VLC ■
◈ mapping
Bijan G. Mobasseri, Michael P. Marcinak
August 2005 **Proceedings of the 7th workshop on Multimedia and security MM&Sec**

'05
Publisher: ACM Press
Full text available: pdf(258.86 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

In this work we propose a new algorithm for fragile, high capacity yet file-size preserving watermarking of MPEG-2 streams. Watermarking is done entirely in the compressed domain, with no need for full or even partial decompression. The algorithm is based on a previously developed concept of VLC mapping for compressed domain watermarking. The entropy-coded segment of the video is first parsed out and then analyzed in pairs. It is recognized that there are VLC pairs that never appear together in ...

Keywords: MPEG-2, compressed domain, variable length code

4   <u>Modelling I: Watermarking subdivision surfaces based on addition property of Fourier</u> ▮
<u>transform</u>
Li Li, Zhigeng Pan, Mingmin Zhang, Kai Ye
June 2004 **Proceedings of the 2nd international conference on Computer graphics and interactive techniques in Australasia and South East Asia GRAPHITE '04**
Publisher: ACM Press
Full text available: pdf(379.14 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>

This paper presents a private subdivision surface watermarking algorithm. The subdivision schemes include Doo-Sabin Subdivision and Loop Subdivision. The subdivision surface watermarking algorithm includes three main steps as followings. First, the resultant watermarked image minus the original image is the watermark information. The image watermarking algorithm is based on the Fourier transform. Then, the watermark information is scaled down and embedded in one part of the x-coordinate o ...

Keywords: 3D watermarking, Doo-Sabin subdivision surfaces, Fourier transform, Loop Subdivision surfaces

5   <u>Watermarking: Approaching optimal value expansion for reversible watermarking</u>   ▮
Bian Yang, Martin Schmucker, Christoph Busch, Xiamu Niu, Shenghe Sun
August 2005 **Proceedings of the 7th workshop on Multimedia and security MM&Sec '05**
Publisher: ACM Press
Full text available: pdf(432.86 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

We investigate in this paper several recently proposed reversible watermarking algorithms based on value expansion schemes: bit-shifting, histogram modification, spread spectrum, companding and prediction-error expansion, and present a general model - histogram expansion - for all value expansion based reversible watermarking algorithms, which demonstrates a unified view of these different algorithms and gives them a performance comparison in terms of watermarking distortion and embedding capaci ...

Keywords: histogram expansion, reversible watermarking, value expansion

6   <u>Nearly Lossless Audio Watermark Embedding Techniques to be Extracted</u>   ▮
<u>Contactlessly by Cell Phone</u>
Toshio Modegi
May 2006 **Proceedings of the 7th International Conference on Mobile Data Management (MDM'06) - Volume 00 MDM '06**
Publisher: IEEE Computer Society

Full text available: Publisher Site   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>index terms</u>

We have proposed a novel audio watermarking technique, which embeds a set of bitstream data by changing two-channel stereo locations of lower frequency components in an embedding target audio signal. This method features nearly lossless embedding, robustness against lossy data compression or analogue conversion, and enables contactless asynchronous detection of embedded watermarks through speaker and microphone devices without the original audio signals. Then, we propose several extended monaura ...

7 <u>A secure semi-fragile watermarking for image authentication based on integer wavelet transform with parameters</u>

Xiaoyun Wu, Junquan Hu, Zhixiong Gu, Jiwu Huang
January 2005 **Proceedings of the 2005 Australasian workshop on Grid computing and e-research - Volume 44 ACSW Frontiers '05**
Publisher: Australian Computer Society, Inc.
Full text available: pdf(304.75 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Semi-fragile watermark fragile to malicious modifications while robust to incidental manipulations is drawing many attentions in image authentication. However, watermark security has not received enough attention yet. Lifting scheme can construct second generation wavelets. With regard to the first generation wavelets, its implementation is easier, simpler and faster than the Mallat algorithm. In this paper, we propose a novel semi-fragile watermarking scheme for image authentication based on in ...

Keywords: image authentication, integer wavelet transform, parameterization, semi-fragile watermark, watermark security

8 <u>Behavioral synthesis techniques for intellectual property protection</u>

Farinaz Koushanfar, Inki Hong, Miodrag Potkonjak
July 2005 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 10 Issue 3
Publisher: ACM Press
Full text available: pdf(439.81 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

We introduce dynamic watermarking techniques for protecting the value of intellectual property of CAD and compilation tools and reusable design components. The essence of the new approach is the addition of a set of design and timing constraints which encodes the author's signature. The constraints are selected in such a way that they result in a minimal hardware overhead while embedding a unique signature that is difficult to remove and forge. Techniques are applicable in conjunction with an ar ...

Keywords: Intellectual property protection, behavioral synthesis, watermarking

9 <u>Robust digital watermarking: The digital watermarking container: secure and efficient embedding</u>

Martin Steinebach, Sascha Zmudzinski, Fan Chen
September 2004 **Proceedings of the 2004 workshop on Multimedia and security MM&Sec '04**
Publisher: ACM Press
Full text available: pdf(357.96 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

While acceptance of digital watermarking as a technology to protect digital media is constantly increasing, integrated applications are still comparatively rare. Two reasons are

the challenge of secure key handling due to the symmetric nature of digital watermarking and the often high demand regarding computational power to embed a watermarking into a media file. We introduce a possible solution to this problem, the digital watermarking container. It splits the watermarking process in a preproce ...

Keywords: complexity, container, optimization, security, watermarking

10 Watermarking: Dual watermarking for protection of rightful ownership and secure image authentication
Mathias Schlauweg, Dima Pröfrock, Benedikt Zeibich, Erika Müller
October 2006 **Proceedings of the 4th ACM international workshop on Contents protection and security MCPS '06**
Publisher: ACM Press
Full text available: pdf(1.33 MB)   Additional Information: full citation, abstract, references, index terms

A digital watermarking approach highly robust to lossy image compression is presented. It is shown how geometrically warping objects can be used to imperceptibly embed information into images for the purpose of property rights protection. Common lossy image compression is optimized for maintaining the geometric image structure. Hence, as we demonstrate, the embedded information is not affected by a successive embedding approach in the compression domain. This second watermarking scheme is used f ...

Keywords: JPEG2000, authentication, dual watermarking, error correction coding (ECC), normed centre of gravity (NCG)

11 Authentication and forensics: JPEG2000-based secure image authentication
Mathias Schlauweg, Dima Pröfrock, Erika Müller
September 2006 **Proceeding of the 8th workshop on Multimedia and security MM&Sec '06**
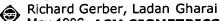**Publisher**: ACM Press
Full text available: pdf(677.66 KB)   Additional Information: full citation, abstract, references, index terms

We present an efficient JPEG2000-based image authentication scheme, which is robust to JPEG compression and other allowed signal processing operations. Positive wavelet-based watermarking approaches proposed in recent years are enhanced by image adaptive perceptual modeling and error correction coding. Our new method is secure in contrast to most of the schemes proposed so far. Lots of popular features of the JPEG2000 compression framework are supported, such as quality and resolution scalabilit ...

Keywords: ECC, JPEG2000, authentication, watermarking, wavelet domain

12 Experiments with digital video playback
Richard Gerber, Ladan Gharai
May 1996 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1996 ACM SIGMETRICS international conference on Measurement and modeling of computer systems SIGMETRICS '96**, Volume 24 Issue 1
Publisher: ACM Press
Full text available: pdf(1.25 MB)   Additional Information: full citation, abstract, references, index terms

In this paper we describe our experiments on digital video applications, concentrating on the static and dynamic tradeoffs involved in video playback. Our results were extracted from a controlled series of 272 tests, which we ran in three stages.In the first stage of 120 tests, we used a simple player-monitor tool to evaluate the effects of various static parameters: *compression type, frame size, digitized rate, spatial quality* and *keyframe*

distribution. The tests were carried out ...

13 Reconfigurable hardware solutions for the digital rights management of digital cinema ▪

G. Rouvroy, F.-X. Standaert, F. Lefèbvre, J.-J. Quisquater, B. Macq, J.-D. Legat
October 2004 **Proceedings of the 4th ACM workshop on Digital rights management**
Publisher: ACM Press
Full text available: 📄 pdf(440.86 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

This paper presents a hardware implementation of a decoder for Digital Cinema images. This decoder enables us to deal with image size of 2K with 24 frames per second and 36 bits per pixels. It is the first implementation known nowadays that perfectly fits in one single Virtex-II® FPGA and includes AES decryption, JPEG 2000 decompression and fingerprinting blocks. This hardware offers therefore high-quality image processing as well as robust security.

Keywords: AES, DRM, FPGA, JPEG 2000, digital cinema, watermarking

14 Multimedia and Visualization (MV): A robust watermarking system based on *SVD* ▪

compression
Maria Calagna, Huiping Guo, Luigi V. Mancini, Sushil Jajodia
April 2006 **Proceedings of the 2006 ACM symposium on Applied computing SAC '06**
Publisher: ACM Press
Full text available: 📄 pdf(871.94 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Digital watermarking can be used to protect the intellectual property for multimedia data. In this paper, we introduce an image watermarking scheme based on the SVD (*Singular Value Decomposition*) compression. In particular, we divide the cover image into blocks and apply the SVD to each block; the watermark is embedded in all the non-zero singular values according to the local features of the cover image so as to balance embedding capacity with distortion. The watermarking system we propo ...

Keywords: digital watermarking, image compression, singular value decomposition

15 On providing support for protocol adaptation in mobile wireless networks ▪
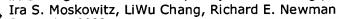
Pradeep Sudame, B. R. Badrinath
January 2001 **Mobile Networks and Applications,** Volume 6 Issue 1
Publisher: Kluwer Academic Publishers
Full text available: 📄 pdf(146.48 KB)   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Keywords: adaptivity, mobility, protocols, wireless networks

16 Securing information: Capacity is the wrong paradigm ▪

Ira S. Moskowitz, LiWu Chang, Richard E. Newman
September 2002 **Proceedings of the 2002 workshop on New security paradigms**
Publisher: ACM Press
Full text available: 📄 pdf(2.04 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

At present, "capacity" is the prevailing paradigm for covert channels. With respect to steganography, however, capacity is at best insufficient, and at worst, is incorrect. In this

paper, we propose a new paradigm called "capability" which gauges the effectiveness of a steganographic method. It includes payload carrying ability, detectability, and robustness components. We also discuss the use of zero-error capacity for channel analysis and demonstrate that a JPEG compressed image always has the ...

17 Cyber warfare: steganography vs. steganalysis

Huaiqing Wang, Shuozhong Wang
October 2004 **Communications of the ACM**, Volume 47 Issue 10
Publisher: ACM Press
Full text available: pdf(311.10 KB)   Additional Information: full citation, abstract, references, index terms,
html(27.82 KB)   review

For every clever method and tool being developed to hide information in multimedia data, an equal number of clever methods and tools are being developed to detect and reveal its secrets.

18 Caption processing for MPEG video in MC-DCT compressed domain

Jongho Nang, Ohyeong Kwon, Seungwook Hong
October 2000 **Proceedings of the eighth ACM international conference on Multimedia**
Publisher: ACM Press
Full text available: pdf(930.39 KB)   Additional Information: full citation, abstract, references, index terms

The (cinema) caption processing that adds descriptive texts on the sequence of frames is an important video manipulation function that video editor should support. This paper proposes an efficient MC-DCT compressed domain approach to insert the caption into the MPEG-compressed video stream. It basically adds the DCT blocks of the caption image to the corresponding DCT blocks of the input frames one by one in MC-DCT domain as in [5]. However, the strength of the caption image is adjusted in th ...

Keywords: MC-DCT domain, MPEG editing, MPEG video, caption processing

19 Benchmarking and attacks: A symbolic transform attack on lightweight encryption based on wavelet filter parameterization

Dominik Engel, Rade Kutil, Andreas Uhl
September 2006 **Proceeding of the 8th workshop on Multimedia and security MM&Sec '06**
Publisher: ACM Press
Full text available: pdf(569.92 KB)   Additional Information: full citation, abstract, references, index terms

We present a family of attacks on lightweight encryption schemes for visual data that rely on wavelet filter parameterizations to provide security. All of the attacks construct a symbolic representation of the inverse wavelet transform. We show that this representation can be used in ciphertext-only attacks, known-plaintext attacks and in attacks in which some information on the plaintext is available. We investigate the success and feasibility of each of these attacks, and conclude that the pre ...

Keywords: JPEG2000, attack, ciphertext-only, known-plaintext, secret frequency domain, secret parameterized wavelet filters

20 Encryption: Parameterized biorthogonal wavelet lifting for lightweight JPEG 2000 transparent encryption

Dominik Engel, Andreas Uhl
August 2005 **Proceedings of the 7th workshop on Multimedia and security MM&Sec '05**

Publisher: ACM Press

Full text available: 📄 pdf(1.24 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Lightweight encryption offers a cogent alternative to full encryption of visual content in application settings with clients of low processing power, e.g. mobile applications, as it counterbalances security demands and computational demands. We present a lightweight transparent encryption scheme for JPEG 2000 that is based on and integrated into the wavelet lifting scheme. Keys are constructed from parameterized biorthogonal filters. The proposed method comes at extremely low computational cost ...

Keywords: JPEG 2000, lightweight encryption, parameterized biorthogonal wavelet lifting, transparent encryption

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L1	1	("6574349").PN.	US-PGPUB; USPAT	OR	OFF	2006/11/24 15:19
L2	1	("6157330").PN.	US-PGPUB; USPAT	OR	OFF	2006/11/24 15:21
L3	1	("6690812").PN.	US-PGPUB; USPAT	OR	OFF	2006/11/24 15:21
S1	132	linnartz.in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 16:55
S2	5	watermark same (prediction adj filter)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/09 19:41
S3	6652	"20000426".fd.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/09 19:45
S4	0	("9559230").PN.	US-PGPUB; USPAT	OR	OFF	2006/08/09 19:43
S5	0	("7093286").PN.	US-PGPUB; USPAT	OR	OFF	2006/08/09 19:44
S6	0	"09/559,230"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/09 19:45
S7	0	"20000426".fd. and king-peter-f.in.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/09 19:48
S8	1	("6141653").PN.	US-PGPUB; USPAT	OR	OFF	2006/08/09 20:32
S9	1	("6308203").PN.	US-PGPUB; USPAT	OR	OFF	2006/08/09 20:32
S10	1937	(713/176).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/08/10 16:18

EAST Search History

S11	265	S10 and (parameter filter) same watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/10 16:29
S12	230	S10 and (@pd > "20060321")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/10 17:31
S13	48	"6332194"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/08/10 17:31
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S17	0	(prediction adj filter) same llc adj algorithm and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 15:47
S18	0	(prediction adj filter) same llc and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:02
S19	5	(prediction adj filter) same watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 15:48

S20	6	(prediction adj filter) and watermark.ab.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 15:49
S21	1198	(380/200-202).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/11/21 16:55
S22	3143	((380/200-202) or (713/176)).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/11/21 20:56
S23	59	S21 and (@pd > "20060810")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 16:56
S24	2092	(713/176).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/11/21 20:56
S25	1	S24 and (lossless adj (coding encoding)) same parameter	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:00
S26	2	S24 and (lossless adj (coding encoding))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:00
S27	0	(prediction adj filter) same (lossless adj (coding encoding)) and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:02
S28	0	(prediction adj filter) and (lossless adj (coding encoding)) and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:02
S29	56	(prediction adj filter) and (lossless adj (coding encoding))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:06

S30	0	(prediction) and probability adj (table matrix) and (lossless adj (coding encoding)) and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:06
S31	0	probability adj (table matrix) and (lossless adj (coding encoding)) and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:06
S32	19	(lossless adj (coding encoding)) and watermark	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/11/21 21:06